

## Commentary

# Intensive care transfers

Philip Hopkins\* and Anthony H Wolff†

\*Clinical Research Fellow, Department of Infectious Diseases, Hammersmith Hospital, London, UK

†Director of Intensive Care, Barnet Hospital, London, UK

Correspondence: Anthony H Wolff, [ahwolff@47mvr.com](mailto:ahwolff@47mvr.com)

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### Abstract

The demand for intensive care has increased relentlessly over the past 30 years. It is now regarded as a necessity rather than a luxury. The provision of intensive care has lagged behind that demand. Thus, patients who are judged to need intensive care when a bed is unavailable are increasingly transferred to another hospital for such care. The present commentary discusses intensive care transfers and describes a website being trialled in the UK that helps with locating available intensive care beds.

**Keywords** critical care, patient transfer

The logistics and health economics that surround the provision of intensive care services in the developed world are as complex and fast moving as critical care medicine itself. Nowhere else will issues of funding and delivery be felt more acutely and be more politically visible than when the transfer of critically ill patients is needed because of lack of local resources.

Transfer of critically ill patients is an integral part of the health care system in both developing and developed countries. In Taiwan, which has a rapidly developing critical care network, it is the transfer of sick patients that has proved to be the Achilles' heel of the service. One study [1] showed that 55% of transfers fell below the standard required by law. In Australia transfer of patients from distant rural locations to city centre tertiary referral hospitals produces beneficial outcomes in only some diagnostic categories [2]. For example, patients who had suffered a cardiac arrest had higher than predicted mortality after transfer. When the Physician Accompanied Transport System was assessed in Canada there was serious morbidity in 7% of transfers, with mortality figures approaching 1% [3].

Even in well-developed European countries without the problems associated with large land mass, inadequacies in intensive care transfers have been found. In Switzerland there are 6000 transfers per year, but when analysed these were

found to have been undertaken with inadequate monitoring and arbitrary planning [4].

Although there are many different forces that drive the transfer of critically ill patients, it is clear that minimization and organization of such journeys should become a priority.

Nowhere is this more clear than in the UK, where there are fewer critical care beds per person [5,6] than in other comparative European countries. This has led to large numbers of critically ill patients being transported between hospitals, predominantly by road. In 1995 a junior hospital doctor could not find a bed for a road traffic accident victim in London. The patient was eventually flown to Leeds General Infirmary, but died during the journey. In an attempt to address this problem, a national intensive care unit (ICU) register was announced by Gerry Malone, the health minister responsible at the time. This system is currently run by the Emergency Bed Service (EBS), a system that is based on telephone survey of available critical care beds.

EBS statistics (H Salihson, personal communication, 2001) show that the number of enquiries for ICU beds in England did not change between December 1996 and August 2000. One audit found that half of all transport of critically ill individuals is needed because of lack of beds or staff [7]; indeed, EBS figures reveal that only approximately 25% of

transfers in England are currently for specialist services. Although the latter is not the bulk of the workload, numbers of such transfers will only rise with the increasing trend to centralize such services. In December 1999, when there were over 1200 enquiries to the EBS, resulting in almost 1000 transfers, it issued its first ever warning that ICU beds were in short supply. The problem remains so common that the UK Department of Health has issued guidelines regarding which critically ill patients should be transferred [8]. The numbers have even warranted the development of specialist transfer teams [9].

Such transfers, even when possible, are not benign. During the Napoleonic Wars, Baron Jean Larrey [10] was the first to describe the benefits of rapid transfer of patients. The time taken, quality of transfer and distance travelled are now known to impact on subsequent patient outcome [9,11,12]. Indeed, at a time when acute resuscitation of an individual should take priority [13], efforts are instead being spent on attempting to find an ICU bed for that individual.

There are also deficiencies in data recorded by the EBS. First, because there are only three telephone enquiries per day, there is a considerable lag time on bed availability. Many units also retain beds for 'internal' or 'specialist' use only, some of which may not be declared, whereas others transfer without using the EBS. There is also no record of available high-dependency unit (HDU) beds. All of these factors make rapid responses to local 'overcrowding' difficult. They also sometimes result in patients being transferred over unnecessarily long distances. Finally, they render useful long-term audit and planning almost impossible [6].

Although complex issues that surround the prolongation of life by artificial means are of little relevance in many countries where preventable infectious diseases kill 10 million people per year, we paradoxically may be able to learn from their nonpolitical and not-for-profit use of the Internet for the organization of Internet services. The Program for Monitoring Emerging Diseases (ProMED), an electronic mail conferencing initiative that acts as an early warning system for infectious disease outbreaks, is one such example. In 1998 it reported a cholera outbreak affecting 64,000 persons in Bangladesh – a fact that the Bangladeshi government could not publish via the World Health Organization through fear of provoking a ban on shrimp exports [14].

In an attempt to transfer such a strategy to address the problems associated with intensive care transfers in the UK, an Internet-based site has been developed to augment and possibly replace the current EBS system. ICUnet (located at [www.icubeds.info](http://www.icubeds.info)) seeks to provide a simple, up-to-date view of available critical care services, overcoming many of the difficulties referred to above. This service has been launched in its pilot phase and will go fully live early in 2002.

The system has been designed to allow simple access and encourage rapid updating of data by user units. It does not require the installation of any specialized software or link mechanism. Users of the system can either log-on as a specific ICU or as a guest.

Units are required to use a password and are then able to submit the bed state of their ICU to the system. The following bed state options are available: able to accept a transfer; self-sufficient; would need to transfer a new patient; and have a patient to transfer. Initially, the 'self-sufficient' category would encompass units retaining a bed for 'in-house' use, units able to discharge a patient to accept a new admission, and units with only HDU-level space available. Even in this simple form, it would enable someone searching for an ICU bed in a region experiencing an acute shortage of beds to access units that would be invisible under the current system, and thereby prevent the enforced transfer of critically ill patients over long distances.

Guests are only able to view the state of ICUs, without being able to make changes. They log on by providing their postcode; this allows the system to provide information regarding the units closest to them. It is envisaged that this facility would be used in accident and emergency departments.

Data collection and display will be deliberately non-threatening to individual units, and will not encourage any culture of 'naming and shaming'. In the future, however, it could allow potent analysis of transfers of critically ill patients and direct distribution and allocation of resources. More sophisticated systems could be developed to allow movement of children, patients requiring specialist services, or patients requiring HDU-level care.

There are well over 100,000 health-related sites on the Internet and the latest Healtheon Survey (April, 1999) estimated that 85% of US physicians are Internet users [15]. In 1996, 16 billion dollars was spent on information/technology in the American health care system [16]. We in the UK should at least be able to provide rapid practical help to doctors and nurses seeking an ICU bed for our sickest patients, and to deliver accurate and transparent data for audit and resource bed allocation. ICUnet is the first step on this road.

## Competing interests

None declared.

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